<u>REMARKS</u>

Claims 1-26 are presented for examination. Claims 1, 2, 4, 5, 8, 9, 11, 12, 20, and 24 have been amended to define more clearly what Applicant regards as his invention. Claims 1, 4, 8, and 11 are in independent form. Favorable reconsideration is requested.

Claims 1, 3, 8, 10, 17-19, and 22 were rejected under 35 U.S.C. § 103(a) as being obvious from *Cox* (U.S. Patent 5,915,027) in view of *Moskowitz* (U.S. Patent 5,889,868); Claims 2, 3, 9, and 10, as being obvious from *Cox* in view of *Moskowitz*, and further in view of *Sandford* (U.S. Patent 5,727,092); Claim 15, as being obvious from *Cox* et al. in view of *Moskowitz*, and further in view of *Kunimoto* (U.S. Patent 5,303,236); Claims 20 and 21, as being obvious from Cox et al. in view of *Moskowitz*, and further in view of *Mahe* (U.S. Patent 6,459,685); Claims 4-7, 11-14, 17, 18, 23, and 26, as being obvious from *Cox* in view of *Nakagawa* (U.S. Patent 6,104,826); Claim 16, as being obvious from *Cox* in view of *Nakagawa*, and further in view of *Kunimoto*; and Claims 24 and 25, as being obvious from *Cox* in view of *Nakagawa*, and further in view of *Mahe*.

Claim 1 is directed to a method of inserting a message into digital data representative of physical quantities, the message including ordered symbols. The method includes the steps of segmenting the data into regions, and associating at least one region with each symbol to be inserted. For each region into which a symbol in question is to be inserted, the method includes the steps of (1) determining a pseudo-random function, from a key which depends on an initial key and on a length of the message, the dependence on the length of the message being provided either by a dependence on the number of times

the symbol has been inserted into other regions or by a dependence on a ranking of the symbol among the ordered symbols, (2) modulating the symbol in question by the previously determined pseudo-random function in order to supply a pseudo-random sequence, and (3) adding the pseudo-random sequence to the region in question.

One notable feature of Claim 1 is determining a pseudo-random function, from a key which depends on an initial key and on a length of the message, the dependence on the length of the message being provided either by a dependence on the number of times the symbol has been inserted into other regions or by a dependence on a ranking of the symbol among the ordered symbols.

The general nature of *Cox*, and the general nature of *Moskowitz*, have been discussed adequately in previous papers, and it is not believed to be necessary to repeat that discussion.

The Examiner states, at page 6 of the Office Action, that "Cox as modified by Moskowitz does not disclose a number of times the symbol to be inserted has already been inserted into other regions and a ranking of the symbol among the ordered symbols." Thus, the Examiner concedes that *Cox* and *Moskowitz* do not teach or suggest the use of the number of times a symbol has been inserted, or the ranking of the symbol among the ordered symbols, as in Claim 1.

The Examiner, however, asserts that these features are suggested by *Sandford*.

Sandford, as understood by Applicant, relates to embedding auxiliary

information into the digital representation of host data created by a lossy compression technique.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. § 2143.

The Examiner states at page 6 of the Office Action:

> Sandford, however, discloses a number of times the symbol to be inserted has already been inserted into other regions and a ranking of the symbol among the ordered symbols (Column 6, lines 53-65). It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the sorting technique of Sandford into the digital watermarking system of Cox as modified by Moskowitz in order to minimize the amount of symbols that need to be inserted into the data.

Applicant submits that *Sandford* merely discusses that sorting pairs by occurrence frequency minimizes the number of pairs needed to embed a particular auxiliary data stream. As such, nothing in *Sandford* would teach or suggest the use of the number of times a symbol has been inserted, or of its ranking, in connection with the dependence of a pseudo-random function on the length of the message, as in Claim 1.

Consequently, Applicant submits that there is no reason why a person

having ordinary skill in the art would use the occurrence frequency of pairs (meant in *Sandford* to sort the pairs in order to minimize the number of pairs embedded) in relation with a totally different technical issue, i.e., the dependence of a key on a length of a message, which allows retrieval of the length of the message at the decoder side, as provided by the method of Claim 1. (See, for example, page 2, lines 2-4 of the present application.)[1] Applicant submits that because there is no mention in *Sandford* of this advantage of the present invention or of providing a key which depends on the length of a message, there is no suggestion or motivation for combining *Cox* and *Moskowitz* with *Sandford*. In this way, Applicant submits that is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine *Cox*, *Moskowitz*, and *Sandford*.

Furthermore, as previously noted, assuming *arguendo* that a combination of *Cox*, *Moskowitz*, and *Sandford* would even be permissible, Applicant submits that the incorporation of "the sorting technique of Sandford into the digital watermarking system of Cox as modified by Moskowitz", as the Examiner states at page 6 of the Office Action, would not obviously establish a link between this sorting technique and a key dependent on the length of a message. Therefore, such a hypothetical combination would anyway fail to teach or suggest a dependence on the length of the message being provided either by a dependence on the number of times the symbol has been inserted or by a dependence on a ranking of the symbol, as in Claim 1. As such, Applicant submits that the references when

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[1]/It is of course to be understood that the references to various portions of the present application are by way of illustration and example only, and that the claims are not limited by the details shown in the portions referred to.

combined, even if such combination would be permissible, would not teach or suggest all the claim recitations.

Nothing in *Cox*, *Moskowitz*, or *Sandford*, whether considered either separately or in any permissible combination (if any) would teach or suggest determining a pseudo-random function, from a key which depends on an initial key and on a length of the message, the dependence on the length of the message being provided either by a dependence on the number of times the symbol has been inserted into other regions or by a dependence on a ranking of the symbol among the ordered symbols, as recited in Claim 1.

Accordingly, Claim 1 is seen to be clearly allowable over *Cox*, *Moskowitz*, and *Sandford*, whether considered either separately or in any permissible combination (if any).

Independent Claim 8 recites features similar in many relevant respects to those discussed above with respect to Claim 1 and therefore are also believed to be patentable over *Cox*, *Moskowitz*, and *Sandford* for at least the reasons discussed above.

Claim 4 is directed to a method for extracting a message from digital data representative of physical quantities, the message including ordered symbols. The method includes the steps of (1) segmenting the data into regions, (2) extracting a length of an inserted message, from a set of length values, based on the digital data, and (3) extracting the inserted message.

One notable feature of Claim 4 is extracting a length of an inserted message, from a set of length values, based on the digital data.

The general nature of *Nakagawa* has been discussed adequately in previous

papers, and it is not believed to be necessary to repeat that discussion.

At the paragraph bridging pages 2 and 3 of the Office Action, the Examiner asserts that *Nakagawa* would teach extracting a length of an inserted message based on the digital data because "[t]he length value is not determined until all of the possibly watermarked weight coefficients (L) are checked".

Applicant disagrees with this reading of *Nakagawa*. In the portion of that patent cited by the Examiner, i.e. column 13, lines 57-62, it is discussed that the index i of the coefficients C is always taken to vary between 1 and L in a loop process (see in particular the portion discussing the "loop process" in line 52 of column 13, as well as the text "[w]hen the variable i does not yet get to L, the CPU 1 increases the variable i in S108 and then returns the process to the S106" in lines 60-62 of the same column).

Consequently, it is clear that, according to *Nakayama*, the number of coefficients L is known in advance and may accordingly take only one value; it is not determined among a set of length values, as is the length of an inserted message in Claim 4.

Nothing in *Cox* or *Nakagawa*, whether considered either separately or in any permissible combination (if any) would teach or suggest extracting a length of an inserted message, from a set of length values, based on the digital data, as recited in Claim 4.

Accordingly, Claim 4 is seen to be clearly allowable over *Cox* and *Nakawaga*, whether considered either separately or in any permissible combination (if any).

Independent Claim 11 recites features similar in many relevant respects to those discussed above with respect to Claim 4 and therefore are also believed to be patentable over *Cox* and *Nakagawa* for at least the reasons discussed above.
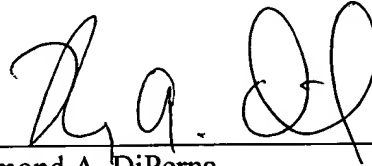
A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

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